

Prieta-Nacozari road and the Rio de Bavispe. At the type locality, several specimens were found crawling over the rocks early in the morning, after a violent thunderstorm; there, it is associated with *Bulimulus nigromontanus* Dall, also crawling in the same rocks. Along the road from El Tajo to La Angostura, just south of Cerro Pinitos, it was found associated with *Sonorella walkeri* P. & F. In the Pilares de Nacozari, just east of town, dead shells of *S. nixonii*, *S. walkeri*, and *B. nigromontanus* were found in quantity, but only one live *nixonii* was collected, a moribund adult, and a clutch of eggs from which only one individual survived in a terrarium. This individual was raised to maturity in just one year. Dissection revealed genitalia similar to those of the population from La Angostura, with the exception of the uniform diameter of the vagina mentioned above.

This species is named for my son, W. Nixon Miller, who found the first specimen and whose help was invaluable in making possible several arduous collecting expeditions into the mountains of northeastern Sonora.

NEW SPECIES OF HELICODISCUS FROM VIRGINIA

By F. WAYNE GRIMM

Division of Medical Entomology, University of Maryland Medical, School,
Baltimore 21201

HELICODISCUS *DIADEMA*, new species. Page 123, figs. A to E.

Shell discoidal, spire flat or slightly depressed; dull greenish-brown, opaque, whorls $4\frac{1}{4}$ to 5; umbilicus wide and shallow, showing all whorls, occupying from 40 to 47% of the diameter of the shell; whorls rounded, slowly increasing, the last descending slightly; sculptured with coarse growth-wrinkles and 11 to 13 pinched spiral threads bearing prominent, curved hairs; sutures deep, impressed; aperture lunate, peristome simple, slightly thickened within; within the last quarter whorl are 2 to 3 pairs of large, radially elongate teeth, and alternating with them, 3 parietal teeth. The teeth on the outer and basal walls precede those on the parietal wall, are borne on a thick callous ridge, and separated by a deep, rounded sinus. The teeth on the outer wall are larger and more pointed than those on the basal wall. The cupped parietal teeth are twice as broad as high, the ends turned forward, and the upper end is longer than the lower. As the shell grows, the inner-

most set of teeth is absorbed and a new set appears near the aperture. In some examples, the innermost parietal tooth remains and only the innermost teeth on the outer and basal walls are absorbed.

Dimensions in mm.

Height	Diameter	of Umbilicus	Whorls
1.34	4.00	1.78	4 $\frac{7}{8}$ holotype
1.09	3.26	1.30	4 $\frac{1}{4}$ paratype
1.48	4.13	1.96	5 paratype
1.22	3.70	1.61	4 $\frac{1}{2}$ paratype

Distribution: Virginia: Rockbridge Co.: leaf litter at base of limey shale outcrop along U. S.-60, 9.2 mi. northwest of jct. U. S.-11 at Lexington. Allegheny Co.: base limey shale outcrop 4.9 mi. west of jct. U. S.-60 and U. S.-220 at Covington; thinly wooded (*Robinia*) limestone hillside near quarry on U. S.-220, 7.6 mi. northeast of Covington city limit and 1.8 mi. southwest of Bath Co. line, holotype U.S.N.M. 683586; paratypes U.S.N.M. 683587, A.M.N.H. 128744, A.N.S.P. 310365, M.C.Z. 256812, U.M.M.Z. 228931, collection of Leslie Hubricht (35749), and collection of the author (1640).

The apertural dentition of *Helicodiscus diadema* is almost identical to that of *H. multidentis* Hubricht and *H. enneodon* Hubricht. *Helicodiscus diadema* differs from both species by having fewer, coarser fringes on the body whorl, and from all other previously described species by possessing large, curved hairs on the lirae. "*H. multidentis* has between 25 and 30 fringes on the body whorl. They are so fine that it is hard to count them accurately." (Hubricht, in litt.) The hairs wear off with age, for the youngest examples are the most conspicuously hirsute, and the old adults bear only scattered traces of their previous adornment. In the field, these hairs, visible to the unaided eye and bearing tiny droplets of condensed moisture, gave the shells the appearance of being crowned with rings of gems.

At the type-locality, *Helicodiscus diadema* is abundant in the topmost layer of damp leaf litter on an exposed, locust-scrub clad, limestone hillside. Living specimens are quite rare in the deeper layers of leaves and soil, where *H. notius* Hubricht, *H. intermedius* Morrison, and *H. jacksoni* Hubricht were found.

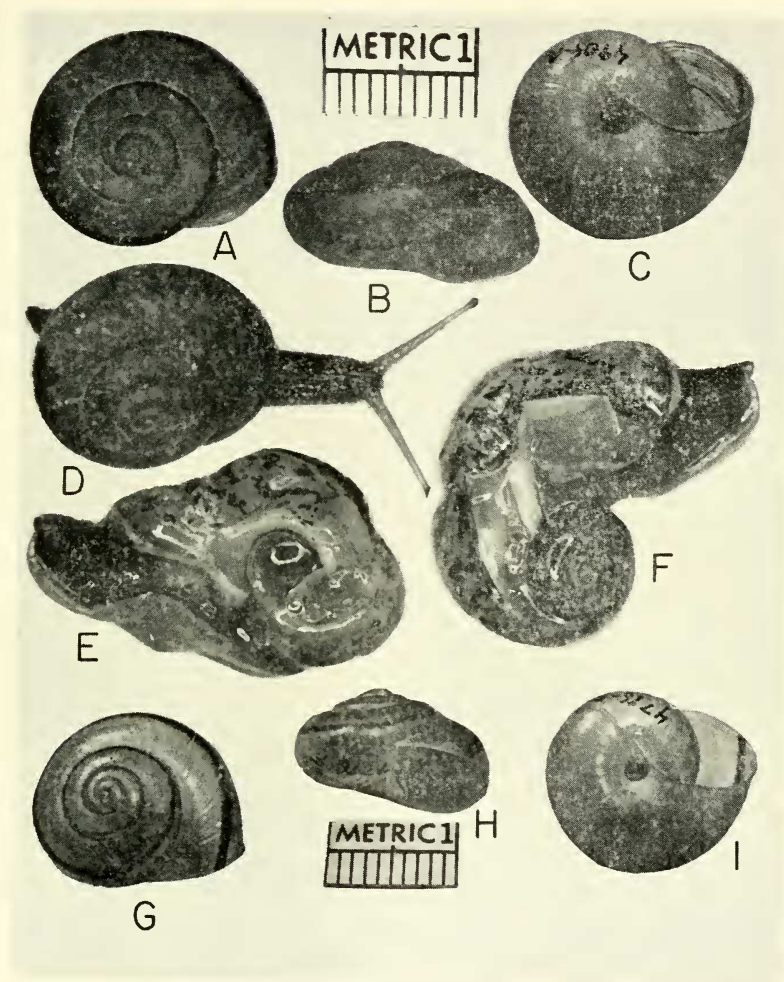


Plate 7. Lower genitalia. A. Holotype, *S. nixoni* W. B. Miller; B. Verge of paratype 4796-E. C. Holotype, *S. greggi* W. B. Miller; D. Verge of paratype 4788-A. E. Verge of *S. granulatissima* Pils. F. Verge of *S. bowiensis* Pils. G. Verge of *S. binneyi* P. & F., #4910-A, front view. H. Verge of *S. binneyi* P. & F., #4802-A, side view. ec, epiphallic caecum; ep, epiphallus; fo, free oviduct; pe, penis; pr, penial retractor; ps, penial sheath; sd, seminal duct; sp, spermathecal duct; va, vagina, vd, vas deferens ve, verge. All drawings to scale indicated, from stained whole mounts.

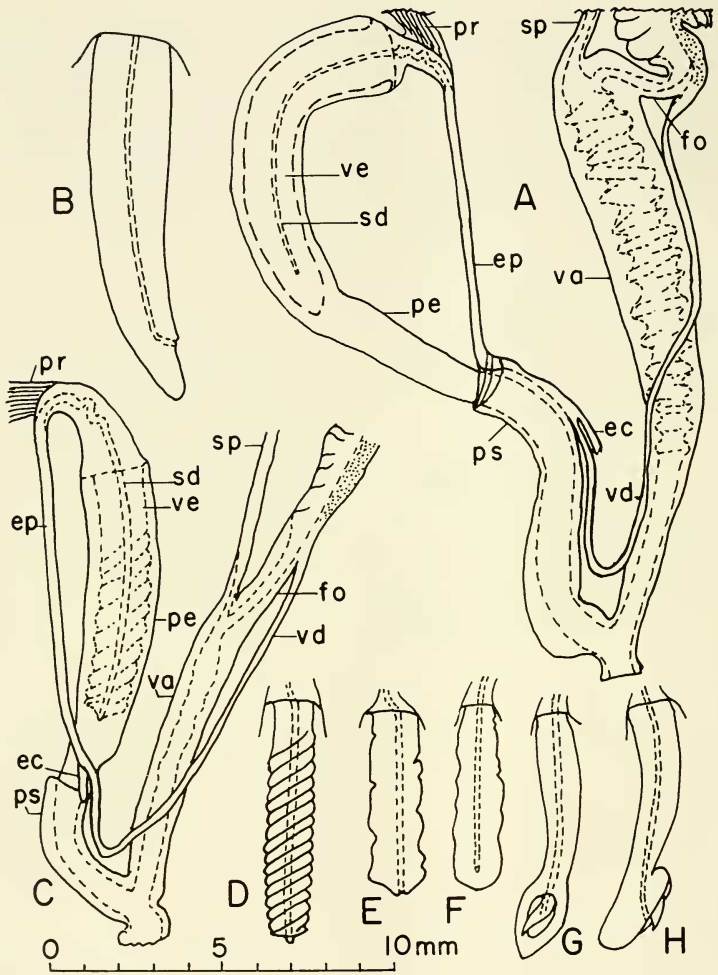
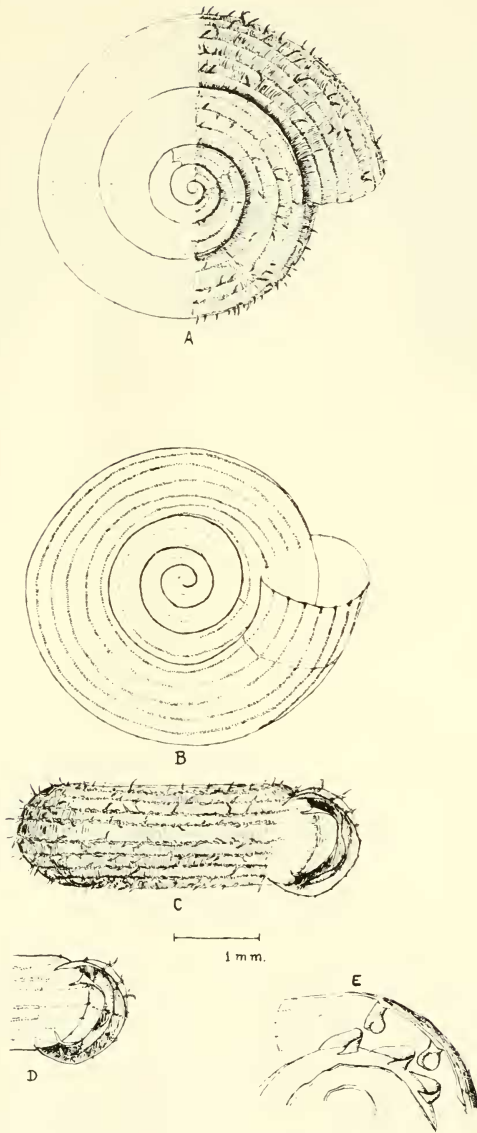


Plate 6. Holotypes. A-F. *Sonorella greggi* W. B. Miller. G-I. *S. nixonii* W. B. Miller. Upper scale for A-F; lower scale for G-I.



Helicodiscus diadema Grimm. A - C, holotype. D, aperture of paratype showing mature dentition. E, paratype, with base removed to show teeth.

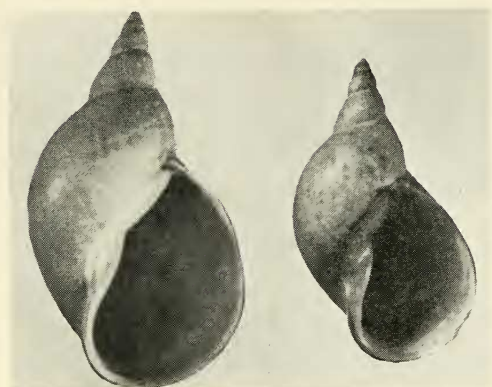


FIG. 1

FIG. 2



FIG. 5

1.0 MM



FIG. 4

.20 MM

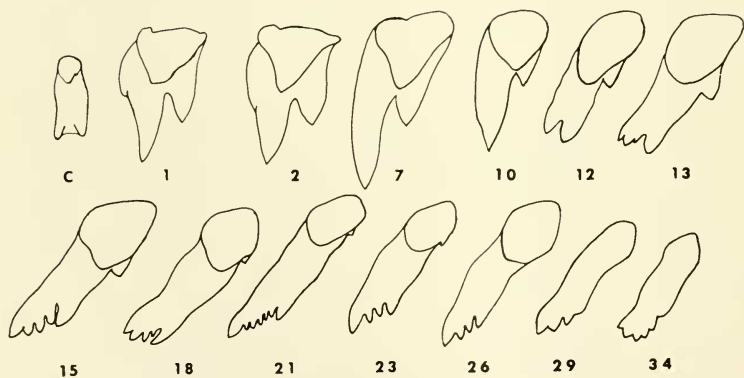


FIG. 3

100 μ

Plate 9, figs. 1-5. *Lymnaea stagnalis brunsoni* Miller. 1, holotype shell. 2, paratype. 3, radular teeth. 4, upper jaw. 5, penial complex.